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ABSTRACT

A college-level introductory Spanish instructional system uses an interactive combination of microcomputer and program-stop tape recorder to enhance students' listening skills. The basic content is listening drills, adapted to the computer medium. Microcomputer use adds considerable versatility to instructional materials, including such features as: choice of drill or test; levels of challenge; recycling of questions missed; access to translations, examples, or explanations; non-audio options; early exit to end routines; self-pacing; and a final performance report. The final report can include essential record-keeping data, a list of the options used, a list and count of error types, specific words missed, an option to redo the items missed, and an option to print out the final report. The final report, when printed, provides the teacher with evidence of the exercise's completion and important data analysis. The software Authoring Aids (Programing) similar or other features are available. The hardware used is an Apple IIe, a Sharp program-stop recorder, and a custom interface, but other, more advanced equipment, such as disk recorders is also available. The teacher can generate his or her own questions, and the program can perform a variety of editorial functions and reminders to the user. (MSE)

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Using the Microcomputer to Develop Listening Skills

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The following presentation was given at the AATF/AATG/AATSP/AATI/ ACTFL Joint Annual Meeting (November 28-30, 1985) in New York City. It was presented in a session of the AATSP called Computers in Research and Teaching. The presentation was accompanied from beginning to end by software "slides" and demonstrations projected on a screen by the Limelight computer projector. The slides and commentary are reproduced by the following text, but the demonstrations are not reproducible in this medium.

There is a strong interest today in putting speech into foreign language computer software. There is a great deal of experimentation under way to find the most practical way to do this. My purpose is to point out some of these ways, and to demonstrate one of them. My department has been using interactive computer-assisted listening drills in Spanish for four years. We developed a system that links our Apple IIe with a program-stop recorder. This kind of recorder is a stock item of several manufacturers. It is designed to stop on a signal that the user can place between each recorded question. Our software restarts the cassette at the appropriate moment.

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The specification, parts list and program command needed to build and implement this workstation can be found in the Autumn, 1985, issue of Collegiate Microcomputer.

Slide 1: Common Uses of Listening Drills

1. To reinforce textbook materials
2. For placement testing
3. For proficiency testing
4. To strengthen listening skills

Commentary: The Spanish software we use is called Audio Lingo Spanish. It drills every topic in our elementary Spanish textbook. Our students have a choice of doing their audio assignment in the cassette laboratory with a workbook, or doing it on the computer. The computer version generates a printout of a performance report, which students turn in instead of a page out of the workbook.

Other common uses of listening drills in our department include placement testing, proficiency testing and general efforts to strengthen listening skills. We have created software to accompany all of these kinds of listening materials. My presentation today is designed to acquaint you with how these materials were prepared, and how you might prepare similar materials of your own, if you are inclined to do so.

Slide 2: Potential Advantages of Computer-Assisted Listening Drills

1. Individualized pace
2. Interactive help routines
3. Automatic score keeping

Commentary: What are the advantages of using a microcomputer over doing listening drills the traditional way? The same features that make non-audio software attractive can also be applied to the audio variety of software. You must decide if the additional feature is worth the cost of adding the necessary peripheral equipment to your computer. "Individualized pace" means that a student can proceed as fast or as slowly as he would like. "Interactive help routines" give students kinds of help not available in the traditional cassette and workbook audio lesson. With "automatic score keeping" there is no delay in getting an evaluation of the study session, and department staff need not spend time scoring papers.

Slide 3: 4. Procedural options:

Drill or test approach
Levels of challenge
Recycling of questions missed
Access to translations, examples or explanations
Non-audio options
Early exit to end routines

Commentary: A great deal of versatility can be incorporated into software. All of those listed here are found in Audio Lingo Spanish, and many of them are in the software we will see in a few minutes. "Drill or test approach" means that you can do the same questions on a drill track, where the student has access to a variety of help routines, or on a test track with only minimal sources of help. "Levels of challenge" are determined by the degree to which the student is forced

to rely on his ear, rather than ear and eye combined. That is, the screen can be completely blank as the student listens, or it can show some or all of what the student hears. "Recycling questions" means that the questions answered wrong by the student can be saved in memory and presented later in the drill session. Immediate "access to translation, examples or explanations" can make the listening drill a more meaningful and less frustrating experience for the student. "Non-audio options" can easily be combined with the audio routines. "Early exit to end routines" gives the student more control over the drill session. One such end routine might include the option to redo the questions answered wrong earlier.

Slide 4: 5. Final report

Essential record keeping data
List of options used
List and count of error types
List of specific words missed
Option to redo items missed
Option to make a printout of this report

Commentary: The most important end routine is the performance report. It can tell the instructor everything he might want to know about the student's drill experience, including "essential record keeping data", such as the name of the lesson drilled, the students's name, and a score. It might also list the options the student chose, such as "audio" or "silent" approach, "drill" or "test" track, level of challenge, etc. It can list the types of errors made, or specific words missed,

or whether the student chose to redo the questions he missed. There should be an option to print out the performance report. This printout is more valuable than any page from a workbook, because it provides evidence that the assignment was actually done and not just copied from another student's workbook. It can provide enough data to free the instructor from the need to correct, analyze or score papers.

Slide 5: Demonstration Equipment

Apple IIe, Monitor, Disk Drive
Sharp Educator Program-stop Cassette Recorder
Custom Interface

Commentary: The equipment set up here for demonstration purposes is like our workstations at U.T.Martin, with the exception that here we have no printer on which to record the performance report. Our Apple IIe with monitor and disk drive cost $850.00, the Sharp recorder cost $140.00, and the custom interface cost about $10.00 in parts from Radio Shack. We use earphones in an actual lab situation, but here we will use the recorder's speaker.

This equipment has the capability of presenting oral questions in the sequence in which they were recorded. The student need only press the "record" button on the recorder once, when cued to do so on the screen. From that point on, all stopping and starting of the cassette is automatic.

Slide 6: Software Available for Demonstration

Keyed to existing tapes:

1. National Spanish Examination
2. Pimsleur Proficiency Test (listening discrimination section)
3. MLA Proficiency Test (listening comprehension section)

Keyed to a college textbook:

Audio Lingo Spanish (Descubrir y crear, 2nd edition, Harper and Row)

Commentary: I brought with me several samples of software keyed to different kinds of listening materials. However, due to time limitations, I have chosen to demonstrate only how such materials are prepared and drilled.

Slide 7: Authoring Software: Audio Drill Master

Drill/Test software

Question Creator/Editor

Documentation

Question Types: true/false, yes/no, multiple choice, fill in blank, dictation

Commentary: The demonstration software is called Audio Drill Master. It consists of two disks, one containing a drill executor and question generator, and the other containing sample question files in several languages and lots of space for storing your own question files.

Slide 8: Technological Alternatives

1. Random access to questions
   a. Random access cassette recorders under computer control:
      SONY CAX-50 and Series 5000 recorders
      Tandberg TCCR 530

Commentary: Before beginning the demonstration, you must realize that

the system you will see demonstrated is just one of several ways of doing computer-assisted listening drills. There are other more expensive technologies with additional features, of which you should be aware.

In order to achieve random access to the audio questions, or to provide for branching or unlimited repetition of the audio question, one could use one of the following systems. The SONY CAX-50 interface and SONY series 5000 recorder costs about $1000.00. As of this date it is very new, and to the best of my knowledge, there is no commercial authoring program available. The Tandberg TCCR 530 costs about $950 plus $250 for authoring software. They are both on display in the exhibition area of this conference. They are random access cassette recorders under computer control.

Slide 9: b. Random access disk recorders under computer control:

Scott Instruments VBLS
Instavox RA-12A (using CACI Vocalware)

Commentary: Random access disk recorders under computer control provide faster random access than the random access cassette recorders. The system which is most familiar is the Scott Instruments VBLS (voice-based learning system), which sells for about $800.00 per workstation, including the authoring software. This system digitizes sound and records it on a standard computer floppy disk.

The Instavox RA 12-A allows for considerably more audio per disk and superior sound, because it uses a larger disk and records analog

sound (like cassettes). It sells for $2400.00 per workstation, not including software.

The disk recorders offer the additional feature of allowing students to give a short oral reply into a microphone, and to electronically compare the student's reply with a prerecorded correct reply.

Manufacturer brochures are available on most of these products in the exhibition area.

Slide 10: c. Other Forms of Teacher Recordable and Teacher Revisable Audio:

Speech digitizing systems

Speech synthesizing systems

Commentary: Other forms of teacher recordable and teacher revisable audio under computer control are available from several manufacturers. A discussion of these and their advantages and disadvantages is beyond the scope of this report.

Slide 11: d. Random Access Playback Only Technologies Under Computer Control:

Microgroove disks played with a stylus

Micropit disks read with a laser beam

Prerecorded network audio

Commentary: We should be aware of several other technologies in which some experimentation is also taking place. The thing these have in common is that authoring or revising the content of these media is generally beyond the reach, either physically or economically, of the classroom teacher.

Slide 12: 2. Audio Visual Technologies Under Computer Control

a. Computer Controlled Still Pictures:

Computer graphics
Slide sync
Videodisk

b. Computer Controlled Moving Pictures
Interactive video cassette
Interactive videodisk

Commentary: Some of these provide for coordination of pictures with audio drills, but all of them require very special equipment and training in order to author, edit or record materials.

The demonstration system we are about to see uses relatively inexpensive equipment, and requires skills that most of us in this profession already possess. As teachers we have all written questions for quizzes and tests, and probably many of these were in the form of listening comprehension items. Many of us have even recorded some of our own oral questions on cassettes, or at least know how, and have the equipment available to do it. These are the tasks required for authoring computer-assisted listening drills. No knowledge of computer programming is required.

Let's begin to explore Audio Drill Master by looking at the question generating program, which is called the Editor. Most of the instructions needed are included in the instruction section of the Editor, but to save time we will skip reading the instructions, and demonstrate them instead. All the special characters needed to write questions in Spanish, French, German, Italian and Portuguese are available in two keystrokes. There is a screen in the instruction section on which you can practice keyboarding.

Demonstration 1. (Menu Screen)

Begin with 1 or 2 below.
1-Create New File
2-Retrieve Existing File
3-Enter Data in File
4-Scan File Contents
5-Save File on Disk
6-Do Printout of File
7-Delete Current File From Memory
8-Quit
Select by Number.

Commentary: Let's access a question file to see what it contains. (Press "2" on keyboard) From the list of files on the Data Disk, we will type the name of the one containing questions in Spanish. When it finishes loading, we automatically return to the Menu Screen and type "4" to scan the file contents. In this demo file, there is one question of each type: true/false, yes/no, multiple choice with four choices, fill in the blank, and sentence dictation. Notice that each question contains from two to six items of data depending on the type of question. After we have seen each of the five questions in the file, we automatically return to the Menu again. Let's add a sixth question to the file. (Press "3" on keyboard) We enter the question number, the code indicating a dictation question and the sentence: ¿Dónde está el señor García? Also the translation: Where is Mister García? Now, we return to the Menu again and type "5" to save the revised file on the disk. And we type "8" to quit.

Demonstration 2. (Boot Master Disk and the Drill Executing program loads)

Commentary: First we must type a first and last name for record keeping purposes. Now we must insert the Data Disk and select the same file that we just revised. Those six questions, including the one we just added, are already recorded on a cassette, which is ready to run. The instructions for making audio tapes for this system are found in the documentation that is part of the Audio Drill Master package. Now we are cued on the screen to press the "PLAY" button on the recorder and the "RETURN" key on the keyboard. (Listen to each question and intentionally make errors) I am answering incorrectly so you can see how the help routines work. We will also invoke the optional help routines: a transcription on the screen of what we have just heard, a translation of the fill in the blank question. Notice there are several opportunities to hear the dictation question, which is the most difficult type of question and requires the most keyboard skill. Of course, when you make your own question files, you can use whichever question types seem appropriate for your students, and mix question types in any sequence you choose.

Here is the question we entered on the Editor. Let's call for the optional hint. (We see: ¿D´--- e--´ e- s-~-- G---´-?) If we call for a second hint, we will see the translation that we entered on the Editor. Notice when your rendering of the answer contains errors, there is an immediate editorial mark-up of your sentence that shows what kinds of errors you made and where each occurred.

Example: Donde está el Señore Gracia?
t≈ ↓ x ∼ ≈

And the key to the mark-up symbols is on the same page. Notice all scoring information immediately appears after each correct answer.

Some features cannot be demonstrated easily. For example, all multiple choice listings, including those used as a hint for the fill in the blank answer, are randomized. Consequently, each time you run the same series of multiple choice questions, the a, b, c or d answers will be different.

After finishing the questions (or after exiting from the questions), we see the following option screen:

1-Redo the Questions Missed
2-Get Report and Quit
3-Start Over

The Redo Section must function without the audio component since only selected questions will be repeated and this system does not provide for random access. In this section all question cues are visual instead of auditory. As many times as you miss a question in this section, it will be reloaded to be presented again later. (Finish Redo Section)

Finally, we see the Performance Report:

AUDIO DRILL MASTER
Performance Report

NAME: Joe Student
LESSON: span. mix
TRACK: With Audio
HINTS USED:
See meaning: 2
See language: 1
Dictation Hints: 2
FINAL SCORE: 65% (23 out of 35 points)

There is a final reminder to rewind the cassette, if you are on the Audio Track.

NOTES: 1. Audio Drill Master is written in EnBASIC, a product of COMPress.

2. At this date Audio Drill Master is not under contract to any publisher, but is under consideration by Gessler.